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(54) **A system and process for recording and indexing broadcast information**

System und Verfahren zum Aufzeichnen und Indexieren von Rundfunkinformationen

Système et procédé d'enregistrement et d'indexation d'informations radiodiffusées

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- **PATENT ABSTRACTS OF JAPAN vol. 8, no. 206 (E-267), 20 September 1984 & JP 59 090470 A (SHARP), 24 May 1984**
- **BENSCH U: "VIDEOTEXT PROGRAMS VIDEORECORDER (VPV)" PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON CONSUMER ELECTRONICS (ICCE), ROSEMONT, JUNE 8 - 10, 1988, no. CONF. 7, 8 June 1988, page 210/211 XP000012936 INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS**
- **PATENT ABSTRACTS OF JAPAN vol. 12, no. 396 (P-774), 21 October 1988 & JP 63 136378 A (MATSUSHITA ELECTRIC INDUSTRIAL), 8 June 1988**
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Description

CROSS REFERENCE TO RELATED INVENTION

[0001] This invention relates to an improvement in the invention described in my earlier U.S. Patent 4,706,121, issued November 10, 1987 and entitled "TV Schedule System and Process."

BACKGROUND OF THE INVENTION

1. Field of the Invention:

[0002] The present invention further relates generally to a system and process in which television supplemental data is embedded in a televised broadcast and, on cue, the viewer can store the supplemental data. Such supplemental data can include schedule information, such as time, channel, program name and program type. The stored data is used to program a VCR automatically for recording a supplemental televised program as defined by the schedule information.

2. Description of the Prior Art:

[0003] The above-referenced related patent describes a system and process which allows user selection of broadcast programs from schedule information for presentation to a television set and/or recording by a VCR. The prior art discussed in that patent and of record in its application shows a variety of systems and processes for increasing the functionality of a television set and/or a VCR.

[0004] Various other prior art VCR systems are known. For example, WO88/04507 describes a system and method for automatic, unattended recording. In addition, DE 3,621,263 A1 describes a VCR system in which broadcast information and an index are recorded on a tape.

SUMMARY OF THE INVENTION

[0005] Another object of the invention to provide a VCR schedule controller that provides an improved index of recorded material on a tape.

[0006] The attainment of this and related objects may be achieved through use of the novel system and process for VCR scheduling disclosed herein.

[0007] Various aspects of the present invention are defined in the independent claims. Some preferred features are specified in the dependent claims.

[0008] The attainment of the foregoing and related objects, advantages and features of the invention should be more readily apparent to those skilled in the art, after review of the following more detailed description of the invention, taken together with the drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Figure 1 is a block diagram of a system for VCR scheduling in accordance with the invention.

[0010] Figure 2 is a block diagram of another system for VCR scheduling in accordance with the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0011] Turning now to the drawings, more particularly to Figure 1, there is shown a block diagram of an integrated VCR schedule controller in accordance with the invention. In this embodiment, the controller is provided built into a VCR, but it cam also be provided separate from the VCR, such as by using the remote facility of the VCR to provide inputs to the VCR.

[0012] Broadcast data is received over antenna 1 or cable 2 by a programmable tuner 3, which has an output connected to input 14 of a teletext receiver 4. The teletext receiver may be a Sears Caption Decoder. The output of the teletext receiver 4 is connected to a microprocessor 5. Microprocessor output 11 is connected to a video display generator 10, used to create text for television receiver 60. Video switcher 15 connects the display generator 10 output 17 to the TV receiver 60 to display a message from the microprocessor 5.

[0013] The microprocessor 5 has a random access memory 9 and a system clock/calendar 6. After processing the embedded data, the microprocessor 5 generates a cue by outputting a symbol or message to the display generator 10 for display on TV receiver 60. Remote control receiver 20 receives a command from a remote controller 22 from a viewer input in response to the cue. Remote control receiver 20 is connected to an input line 21 and supplies a control signal to cause the microprocessor to store the embedded data in memory 9. The microprocessor then issues a message to the display generator 10 as an acknowledgement of the viewer input.

[0014] The cue can be implemented in many ways other than through the microprocessor 5. The simplest is an audio or visual stimulus that is part of the sound or video portion of the broadcast. In this case, both the display generator 10 and the video switcher 15 are unnecessary. The provision of the cue separate from the sound or video portion of the broadcast, such as in the VBI, which is then added to the sound or video portion of the signal provided to the TV receiver 60 by the microprocessor, is not distracting to viewers without the system of this invention.

[0015] The microprocessor 5 monitors the system clock 6 and compares it with the stored schedules from the embedded supplemental data. When the system time corresponds to one of the scheduled times, the microprocessor 5 sets the programmable tuner 3 to the stored channel and initiates recording on VCR 30 by a control signal on line 32. The VCR receives its signal from antenna 35 or cable 36.

[0016] In addition to obtaining schedule information

as part of a broadcast, in a system 90 as shown in Figure 2, the schedule information can be received by a computer 5 using a modem 94 and processed by the computer 5. Based on user selections, one or more program schedule listings is stored in computer memory. At the time of the broadcasts, the computer 5 activates a VCR 30 for recording of the selected programs. Serial output port 32 of the computer 5 connects to a control bus of the VCR 30 to turn on the VCR, control channel selection and enable recording of the program.

[0017] The system 90 incorporates a feature for automatically converting television guide station listings to channel selections for cable users. To eliminate need to convert station listings to local channel numbers each time the VCR 30 is to be programmed for unattended recording, a memory is provided so that the user only needs to enter the conversion once. After that, the conversion is handled by the computer 5. An entry table is provided on-screen requesting the user to enter a cable channel number corresponding to each station name or number. Alternatively, both the station name or number and the cable number may be read from a bar-code conversion guide, using a bar-code reader. In either method, the conversion data is stored in a table in memory. During unattended recording, the channel number corresponding to the station name is used by the computer 5 to control channel selection on the VCR 30. With such a conversion stored locally in the system 90, cable schedule information can be supplied under cable channel names (e.g., ESPN) on a regional or national basis and selection of the appropriate local channel number for that cable service made by the controller 90.

[0018] The system 90 uses electronic indexing for automatic retrieval of programs. During recording, the location of the program is identified by a capstan counter with a digital readout. This index information identifying where a program to be recorded is stored into a log along with the name of the program. During playback, the VCR 30 will automatically go to the indexed location and start playback.

[0019] Line 101 from the VCR 30 is a serial bus containing the index data. It is connected to a serial input port of the computer 5. Search is made by comparing the present index value and the stored index value. Search is completed when the index value from the VCR 30 matches the stored index value.

[0020] The system 90 also provides self-indexed cassette recordings. At the start of each cassette tape, a complete description of the start and end positions of every program recorded on the cassette is stored along with the program names. During playback, this information is read by the teletext decoder of the VCR 30 and presented on the screen, allowing the user to identify quickly what is recorded and to access the desired program automatically. Access is made by name selection from the log.

[0021] During recording, a complete log is created for each tape as described above. Before the tape is removed from the VCR 30, the tape is rewound to the start, and the log information is recorded onto video blanking interval (VBI) tracks of the tape using a VBI data encoder 110 of the type described in my above-referenced issued patent. Line 102 is a serial output from the computer 5 to the VBI encoder 110 and line 103 is the video signal with the embedded log information connecting to the video input port of the VCR 30. While the log information is recorded, the VCR 30 receives its signals from the antenna input 35 to the video input.

[0022] During playback, a VBI teletext decoder 108 receives data from the VCR on line 107, which is the video output port of VCR 30. After decoding, the data is received on line 106 by computer 5 on a second input port. Other than as shown and described, the construction and operation of the Figure 2 embodiment of the invention is the same as that of the Figure 1 embodiment.

[0023] Further details on implementing systems of this invention are available in my above-referenced issued patent.

[0024] It should now be apparent to those skilled in the art that a novel VCR schedule system and process capable of achieving the stated objects of the invention has been provided. The system and process allows interactive selection by a viewer of further information related to information being broadcast, which may be made with a menu selection. The further information can be broadcast for recording by a viewer at a different time, when broadcast time is less costly and/or underutilized.

[0025] It should further be apparent to those skilled in the art that various changes in form and details of the invention as shown and described may be made within the scope of the claims appended hereto.

Claims

1. A system for recording and indexing broadcast information comprising a recording device (30) for receiving and recording the broadcast information, means for receiving and storing associated schedule information and a data processor (5) connected to said recording device, which data processor includes means (5, 9) for creating and storing an index of recorded broadcast information, wherein the system includes:

   means (5, 9, 30) for recording the index on a recording medium that includes the recorded broadcast information;
   a memory (9) coupled to said data processor (5) for storing information identifying a local channel number on which a cable channel is supplied; and
   means for selecting broadcast information for recording,

wherein the means for creating and storing the index is configured to compile the index using schedule information associated with the selected broadcast.

2. The system for recording and indexing broadcast information of claim 1, wherein the means for creating and storing an index is configured to store at least a title of the broadcast information as the index input from the schedule information.

3. The system for recording and indexing broadcast information of claim 1, wherein the means for creating and storing an index is configured to store at least a numeric location of the recorded information as the index input from the recording device.

4. A process for recording and indexing broadcast information, which comprises receiving a user input identifying a local channel number on which a cable channel is received, storing information corresponding to the user input identifying the local channel number on which the cable channel is supplied, using the information corresponding to the input for receiving the broadcast information, creating and storing an index of recorded broadcast information, and recording the index on a recording medium including the recorded broadcast information, the process being **characterized by** selecting broadcast information for recording and creating the index using received and stored schedule information associated with the broadcast that is selected for recording.

Patentansprüche

1. System zum Aufzeichnen und Indizieren von Rundfunkübertragungsinformationen, umfassend:

   eine Aufzeichnungseinrichtung (30) zum Empfangen und Aufzeichnen der Rundfunkübertragungsinformationen,
   Mittel zum Empfangen und Speichern zugehöriger Zeitplaninformationen und
   einen Datenprozessor (5), der mit der Aufzeichnungseinrichtung verbunden ist, welcher Datenprozessor Mittel (5, 9) zum Erzeugen und Speichern eines Index von aufgezeichneten Rundfunkübertragungsinformationen enthält, wobei das System folgendes enthält:

   Mittel (5, 9, 30) zum Aufzeichnen des Index auf einem Aufzeichnungsmedium, das aufgezeichnete Rundfunkübertragungsinformationen enthält,
   einen mit dem Datenprozessor (5)verbundenen Speicher (9) zum Speichern von Informationen, die eine lokale Kanalzahl identifizieren, unter der ein Kabelkanal zur Verfügung gestellt wird; und
   Mittel zum Auswählen von Rundfunkübertragungsinformationen zur Aufzeichnung,

   wobei die Mittel zum Erzeugen und Speichern des Index konfiguriert sind, um den Index unter Verwendung der zur ausgewählten Rundfunkübertragung gehörenden Zeitplaninformationen zusammenzustellen.

2. Das System zum Aufzeichnen und Indizieren von Rundfunkübertragungsinformationen nach Anspruch 1, bei dem die Mittel zu Erzeugen und Speichern eines Index konfiguriert sind, um wenigstens einen Titel der Sendeinformationen als die Indexeingabe von den Zeitplaninformationen zu speichern.

3. Das System zum Aufzeichnen und Indizieren von Rundfunkübertragungsinformationen nach Anspruch 1, bei dem die Mittel zu Erzeugen und Speichern eines Index konfiguriert sind, um wenigstens eine numerische Lage der aufgezeichneten Informationen als die Indexeingabe von der Aufzeichnungseinrichtung zu speichern.

4. Prozess zum Aufzeichnen und Indizieren von Rundfunkübertragungsinformationen, welcher umfasst:

   Empfangen einer Benutzereingabe, die eine lokale Kanalzahl identifiziert, auf welcher ein Kabelkanal empfangen wird,
   Speichern von Informationen, die der Benutzereingabe entsprechen, die die Kanalzahl identifiziert, auf der der Kabelkanal zur Verfügung gestellt wird,
   Verwenden der Informationen, die der Eingabe entsprechen, um die Rundfunkübertragungsinformationen zu empfangen,
   Erzeugen und Speichern eines Index der aufgezeichneten Rundfunkübertragungsinformationen, und
   Aufzeichnen des Index auf einem Aufzeichnungsmedium, der die aufgezeichneten Rundfunkübertragungsinformationen enthält, wobei der Prozess weiter **gekennzeichnet** wird durch Auswählen der Rundfunkübertragungsinformationen zum Aufzeichnen und Erzeugen des Index unter Verwendung von empfangenden und gespeicherten Zeitplaninformationen, die zu der Rundfunkübertragung gehören.

Revendications

1. Système pour enregistrer et indexer des informations d'émission comprenant un dispositif d'enregistrement (30) pour recevoir et enregistrer les informations d'émission, un moyen pour recevoir et mémoriser des informations d'horaire associées et un dispositif de traitement de données (5) connecté audit dispositif d'enregistrement, lequel dispositif de traitement de données comprend un moyen (5, 9) pour créer et mémoriser un index d'informations d'émission enregistrées, dans lequel le système comprend :

   un moyen (5, 9, 30) pour enregistrer l'index sur un support d'enregistrement qui comprend les informations d'émission enregistrées ;
   une mémoire (9) couplée audit dispositif de traitement de données (5) pour mémoriser des informations identifiant un numéro de canal local sur lequel un canal de télévision par câble est fourni, et
   un moyen pour choisir des informations d'émission à enregistrer ;

   dans lequel le moyen pour créer et mémoriser l'index est configuré pour compiler l'index en utilisant des informations d'horaire associées à l'émission choisie.

2. Système pour enregistrer et indexer des informations d'émission suivant la revendication 1, dans lequel le moyen pour créer et mémoriser un index est configuré pour mémoriser au moins un titre des informations d'émission sous la forme de l'entrée d'index des informations d'émission.

3. Système pour enregistrer et indexer des informations d'émission suivant la revendication 1, dans lequel le moyen pour créer et mémoriser un index est configuré pour mémoriser au moins un emplacement numérique des informations enregistrées sous la forme de l'entrée d'index du dispositif d'enregistrement.

4. Procédé pour enregistrer et indexer des informations d'émission, qui comprend la réception d'une entrée utilisateur identifiant un numéro de canal local sur lequel un canal de télévision par câble est reçu, la mémorisation d'informations correspondant à l'entrée utilisateur identifiant le numéro de canal local sur lequel le canal de télévision par câble est fourni, l'utilisation des informations correspondant à l'entrée pour recevoir les informations d'émission, la création et la mémorisation d'un index d'informations d'émission enregistrées, et l'enregistrement de l'index sur un support d'enregistrement comprenant les informations d'émission enregistrées, le procédé étant **caractérisé par** le choix des informations d'émission à enregistrer et la création de l'index en utilisant les informations d'horaire reçues et mémorisées associées à l'émission qui est choisie pour être enregistrée.

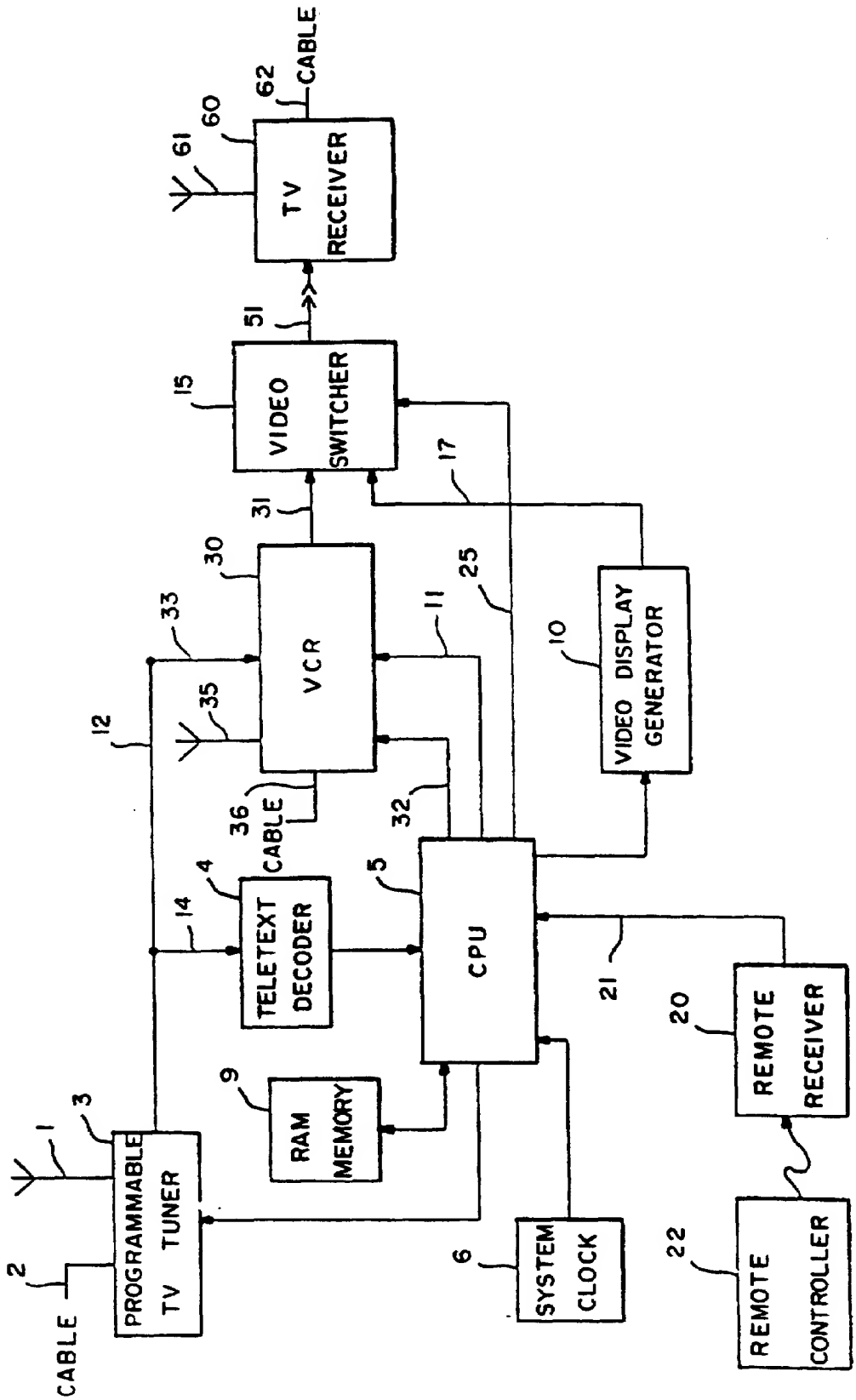
CABLE
2
1
3
PROGRAMMABLE TV TUNER
9
RAM MEMORY
6
SYSTEM CLOCK
4
14
TELETEXT DECODER
36
CABLE
5
CPU
32
12
33
35
30
VCR
31
11
25
15
VIDEO SWITCHER
51
17
10
VIDEO DISPLAY GENERATOR
61
60
62
CABLE
TV RECEIVER
21
20
REMOTE RECEIVER
22
REMOTE CONTROLLER

FIG.—1

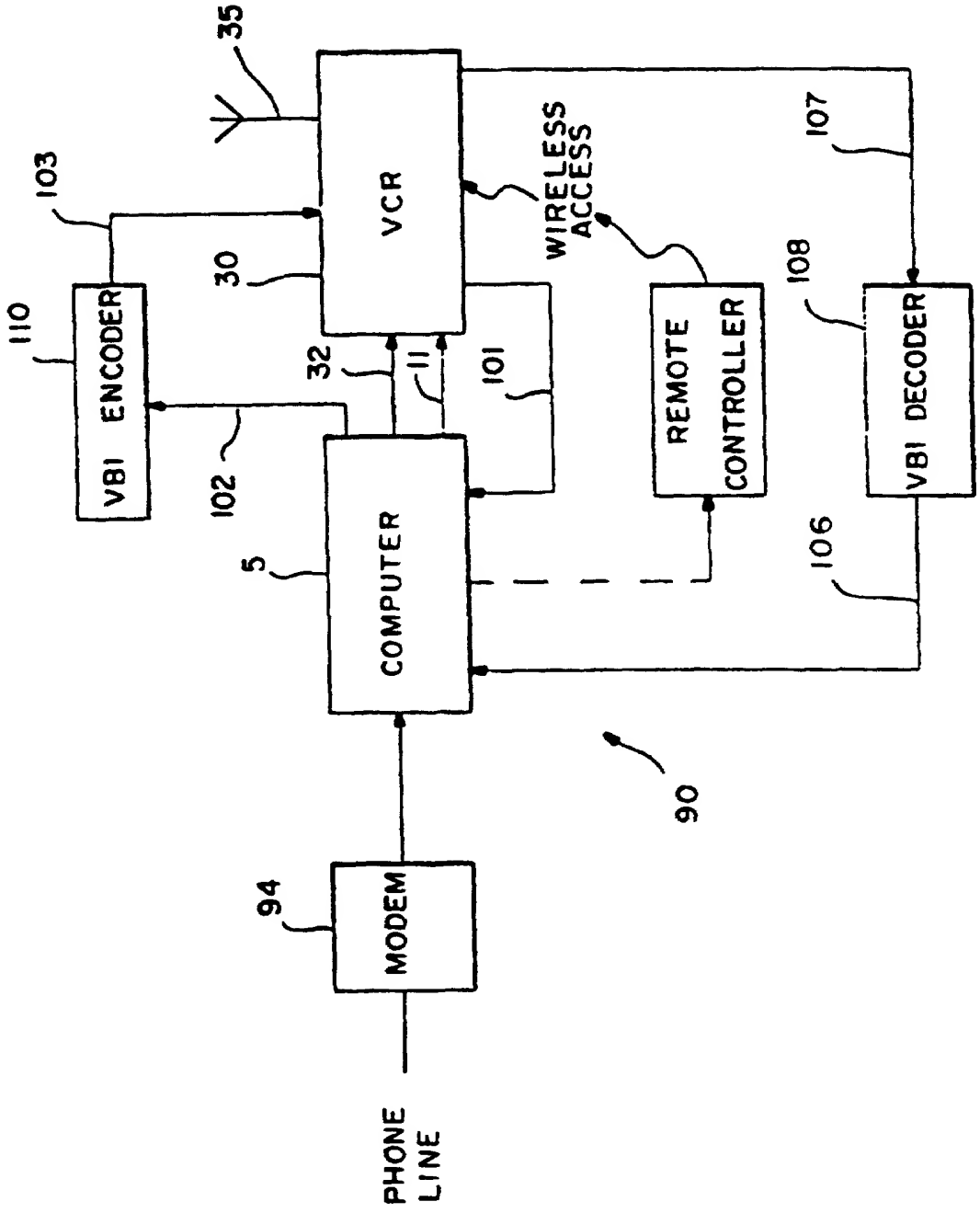
35
VCR
WIRELESS ACCESS
107
103
30
110
VBI ENCODER
32
11
101
REMOTE CONTROLLER
108
VBI DECODER
102
5
COMPUTER
106
90
94
MODEM
PHONE LINE

FIG.—2